



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : Peter J. de Groot
Serial No. : 10/659,060
Filed : September 9, 2003
Title : INTERFEROMETRY METHOD FOR ELLIPSOMETRY, REFLECTOMETRY, AND
SCATTEROMETRY MEASUREMENTS, INCLUDING CHARACTERIZATION OF
THIN FILM STRUCTURES

MAIL STOP AMENDMENT

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INFORMATION DISCLOSURE STATEMENT

Applicants request consideration of the references listed on the attached PTO-1449 form. Under 37 C.F.R. § 1.98 (a)(2)(ii), only copies of foreign patent documents and/or non-patent literature are enclosed. Copies of any listed U.S. patents or U.S. patent application publications can be provided upon request.

This statement is being filed after a first Office action on the merits, but before receipt of a final Office action or a Notice of Allowance. A check for \$180 in payment of the late submission fee of §1.17(p) is enclosed. Please apply any other charges or credits to Deposit Account No. 06-1050, referencing 09712-332001.

Respectfully submitted,

Date:

3/29/06

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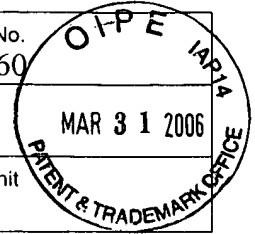
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Substitute Form PTO-1449 (Modified) Information Disclosure Statement by Applicant (Use several sheets if necessary) (37 CFR §1.98(b))	U.S. Department of Commerce Patent and Trademark Office	Attorney's Docket No. 09712-332001	Application No. 10/659,060
	Applicant Peter J. de Groot		
	Filing Date September 9, 2003	Group Art Unit 2877	



U.S. Patent Documents

Examiner Initial	Desig. ID	Document Number	Publication Date	Patentee	Class	Subclass	Filing Date If Appropriate
	AA	5,042,951	08/27/1991	Gold et al.			
	AB	5,129,724	07/14/1992	Brophy et al.	356	357	
	AC	5,301,010	04/05/1994	Jones et al.			
	AD	5,587,792	12/24/1996	Nishizawa et al.			
	AE	5,589,938	12/1996	Deck			
	AF	5,900,633	05/04/1999	Solomon et al.			
	AG	6,242,739	06/05/2001	Cherkassky			
	AH	6,249,351	06/19/2001	de Groot			
	AI	6,259,521	07/10/2001	Miller et al.			
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	AK	6,500,591	12/31/2002	Adams			
	AL	6,507,405	01/14/2003	Grek et al.			
	AM	2002/0135775	09/26/2002	de Groot et al.			
	AN	2002/0196450	12/26/2002	Olszak et al.			
	AO	2003/0112444	06/19/2003	Yang et al.			
	AP	2004/0189999	09/30/2004	de Groot et al.			
	AQ	2005/0057757	3/17/2005	de Lega et al.			
	AR	2005/0068540	03/31/2005	de Groot et al.			
	AS	2005/0073692	04/07/2005	de Groot et al.			
	AT	2005/0078318	4/14/2005	de Groot			
	AU	2005/0078319	4/14/2005	de Groot			
	AV	2005/0088663	4/28/2005	de Groot et al.			
	AW	2005/0146727	7/7/2005	Hill			
	AX	2005/0237534	10/27/2005	Deck			
	AY	2006/0012582	01/19/2006	de Lega			
	AZ	H1972 H	07/03/2001	Inoue			
	AAA						

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Foreign Patent Documents or Published Foreign Patent Applications								
Examiner Initial	Desig. ID	Document Number	Publication Date	Country or Patent Office	Class	Subclass	Translation	
							Yes	No
	BA	0 617 255 A1	09/28/1994	EPO	G01B	11/06		
	BB	0 929 094 A2	07/14/1999	EPO	H01L	21/00		
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	BD	DE 4309056	09/22/1994	Germany	G01B	9/02	Abstract Only	
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	BF	WO 97/44633	11/27/1997	WIPO	G01B	11/24		
	BG	WO 02/082008	10/17/2002	WIPO	G01B	9/02		
	BH	WO 03/062802	07/31/2003	WIPO	G01N	21/47		
	BI							
	BJ							

Other Documents (include Author, Title, Date, and Place of Publication)		
Examiner Initial	Desig. ID	Document
	BK	C. Akcay et al., "Spectral shaping to improve the point spread function in optical coherence tomography", <u>Optics Letters</u> , Vol. 28, No. 20, pp. 1921-1923 (October 15, 2003)
	BL	R.M.A. Azzam et al., "Reflection and Transmission of Polarized Light by Stratified Planar Structures", <u>Ellipsometry and Polarized Light</u> , Elsevier Science B.V. ISBN 0 444 87016 4 (Paperback) pp. 267-363 (1987)
	BM	R.M.A. Azzam et al., "Ellipsometric function of a film-substrate system: Applications to the design of reflection-type optical devices and to ellipsometry", <u>Journal of the Optical Society of America</u> , Vol. 5, No. 3, pp. 252-260
	BN	M. Bashkansky et al., "Signal Processing for Improving Field Cross-correlation Function in Optical Coherence Tomography", <u>Supplement to Optics & Photonics News</u> , 9(5) (May, 1998)
	BO	Berman et al., "Review of In Situ & In-line Detection for CMP Applications", <u>Semiconductor Fabtech - 8th Edition</u> , pp. 267-274
	BP	A. Bosseboeuf et al., "Application of microscopic interferometry techniques in the MEMS field", <u>Proc. SPIE</u> , 5145, pp. 1-16 (2003)
	BQ	M. Davidson et al., "An Application of Interference Microscopy to Integrated Circuit Inspection and Metrology", <u>Proceedings of SPIE</u> , Vol. 775, pp. 233-247 (1987)
	BR	J.E. Greivenkamp, "Generalized data reduction for heterodyne interferometry", <u>Opt. Eng.</u> , Vol. 23 No.4, pp. 350-352 (July/August 1984)
	BS	P de Groot et al., "Signal modeling for low coherence height-scanning interference microscopy", <u>Applied Optics</u> , Vol. 43 No. 25, pp. 4821-4830 (September 1, 2004)
	BT	P. de Groot, "Derivation of algorithms for phase-shifting interferometry using the concept of a data-sampling window", <u>Appl. Opt.</u> , 34(22), p. 4723-4730 (1995)

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Other Documents (include Author, Title, Date, and Place of Publication)		
Examiner Initial	Desig. ID	Document
	CA	P. de Groot et al., "Signal modeling for modern interference microscopes", <u>SPIE Proceedings</u> , 5457-4 (2004)
	CB	Peter de Groot et al., "Determination of fringe order in white-light interference microscopy", <u>Appl. Opt.</u> , 41(22) pp. 4571-4578 (2002)
	CC	P.A. Flournoy et al., "White-light interferometric thickness gauge", <u>Appl. Opt.</u> , 11(9), pp. 1907-1915 (1972)
	CD	G. Hausler et al., "Coherence Radar and Spectral Radar – New Tools for Dermatological Diagnosis", <u>Journal of Biomedical Optics</u> , Vol. 3, No. 1, pp. 21-31 (January, 1998)
	CE	R.D. Holmes et al., "Scanning microellipsometry for extraction of true topography", <u>Electronics Letters</u> , Vol. 31, No. 5, pp. 358-359 (March 2, 1995)
	CF	Seung-Woo Kim et al., "Thickness-profile measurement of transparent thin-film layers by white-light scanning interferometry", <u>Applied Optics</u> , Vol. 38, No. 28, pp. 5968-5973 (October 1, 1999)
	CG	Kieran G. Larkin, "Efficient nonlinear algorithm for envelope detection in white light interferometry", <u>J. Opt. Soc. Am A</u> , pp. 832-843 (1996)
	CH	Kujawinska, Malgorzata, "Spatial Phase Measurement Methods", <u>Interferogram Analysis: Digital Fringe Pattern Measurement Techniques</u> , IOP Publishing Ltd. 1993, pp. 141-193
	CI	Lee et al., "Profilometry with a coherence scanning microscope", <u>Appl. Opt.</u> , 29(26), pp. 3784-3788 (1990)
	CJ	I. Lee-Bennett, "Advances in non-contacting surface metrology", <u>OF&T Workshop</u> , paper OTuC1 (2004)
	CK	K. Leonhardt et al., "Micro-Ellipso-Height-Profilometry", <u>Optics Communications</u> , Vol. 80, No. 3, 4, pp. 205-209 (January 1, 1991)
	CL	Y. Liu et al., "Common path interferometric microellipsometry", <u>SPIE</u> , Vol. 2782, pp. 635-645 (1996)
	CM	Lyakin et al., "The interferometric system with resolution better than coherence length for determination of geometrical thickness and refractive index of a layer object", <u>Proceedings of the SPIE – The International Society for Optical Engineering SPIE-INT. Soc. Opt. Eng USA</u> , Vol. 4956, pp. 163-169 (July, 2003)
	CN	C.J. Morgan, "Least-Squares estimation in phase-measurement interferometry", <u>Apt. Let.</u> , 7(8), pp. 368-370 (1982)
	CO	Ngoi et al., "Phase-shifting interferometry immune to vibration", <u>Applied Optics</u> , Vol. 40, No. 19, pp. 3211-3214 (2001)
	CP	A.V. Oppenheim et al., "10.3: The time-dependent Fourier Transform", <u>Discrete-Time Signal Processing</u> , 2 nd Edition, pp. 714-722 (Prentice Hall, New Jersey, 1999)
	CQ	M.C. Park et al., "Direct quadratic polynomial fitting for fringe peak detection of white light scanning interferograms", <u>Opt. Eng.</u> , 39(4), pp. 952-959 (2000)
	CR	W.H. Press et al., "Linear Correlation", <u>Numerical Recipes in C</u> , Cambridge University Press, 2 nd Edition, pp. 636-639 (1992)
	CS	P. Sandoz et al., "Optical implementation of frequency domain analysis for white light interferometry", <u>Proceedings SPIE</u> , Vol. 2545, pp. 221-228 (June, 1995)
	CT	P. Sandoz et al., "High-resolution profilometry by using phase calculation algorithms for spectroscopic analysis of white-light interferograms", <u>Journal of Modern Optics</u> , Vol. 43, No. 4, pp. 701-708 (1996)

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	DA	P. Sandoz et al., "Processing of white light correlograms: simultaneous phase and envelope measurements by wavelet transformation", <u>SPIE</u> , 3098, pp. 73-82 (1997)
	DB	U. Schnell et al., "Dispersive white-light interferometry for absolute distance measurement with dielectric multilayer systems on the target", <u>Optics Letters</u> , Vol. 21, No. 7, pp. 528-530 (April, 1996)
	DC	J. Schwider et al., "Dispersive interferometric profilometer", <u>Optics Letters</u> , Vol. 19, No. 13, pp. 995-997 (July, 1994)
	DD	C.W. See et al., "Scanning optical microellipsometer for pure surface profiling", <u>Applied Optics</u> , Vol. 35, No. 34, pp. 6663-6668 (December 1, 1996)
	DE	M. Totzeck, "Numerical simulation of high-NA quantitative polarization microscopy and corresponding near-fields", <u>Optik</u> , Vol. 112, No. 9, pp. 399-406 (2001)
	DF	R. Tripathi et al., "Spectral shaping for non-Gaussian source spectra in optical coherence tomography", <u>Optics Letters</u> , Vol. 27, No. 6, pp. 406-408 (2002)
	DG	D. Willenborg et al., "A novel micro-spot dielectric film thickness measurement system", <u>SPIE</u> , Vol. 1594, pp. 322-333 (1991)
	DH	
	DI	

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